

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

## *Cell Cycle: Internet Activity*

### Introduction:

How do cells grow and reproduce? When do our bodies know that it is time to create more cells? The following internet activity will provide you with an interactive activity to help you better understand the production of new cells in your body and how cells “decide” whether or not the new cells are “usable.” Go through the tutorial and game- good luck as you attempt to be the “Cell Division Supervisor” that controls the cell cycle!

### Directions:

1. Go to the following website:  
**<http://nobelprize.org/medicine/educational/2001/index.html>**
2. The page that comes up should be title “Nobelprize.org” and the opening screen for the activity “Control of the Cell Cycle” should appear.
3. Click on “Play the Control of the Cell Cycle Game”
4. Click “Enter” to begin the interactive activity.
5. Read through EVERYTHING and answer the questions below as you go through the tutorial and the game about the cell cycle. There are questions that are answered through the game!

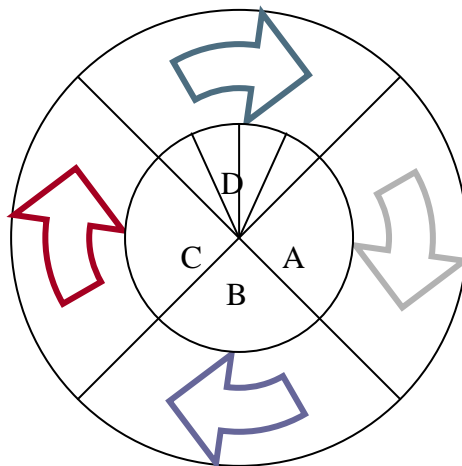
### Questions:

1. When do cells divide?
2. How many cells are replaced in our bodies every minute?
3. List 2 kinds of cells and describe how often each kind divides.
4. What signals a cell to start dividing?
5. At this point, you should be looking at an image depicting the cell cycle (letters A-D- for now, ignore the divisions within section D). Label the picture below and provide descriptions for each part of the cycle with each label.

D: \_\_\_\_\_

C: \_\_\_\_\_

A: \_\_\_\_\_



B: \_\_\_\_\_

6. What are 2 key molecules that help to control and coordinate cell division?

7. As you play the game, note down where the three checkpoints occur (during what phase) and what the cell looks for during each checkpoint. Then label the checkpoints on the diagram above.

Checkpoint 1:

Checkpoint 2:

Checkpoint 3:

8. Why is it important for the cell cycle to be strictly controlled?

9. If damaged cells are not repaired, what happens to them?

10. What problem can develop if the cell cycle is not controlled?

\* When you have reached the end of the activity, click on “Click here to view film” to see cell division occurring in real cells! \*

### *Mitosis Internet Activity*

#### Introduction:

Mitosis is the division of a cell nucleus and cytokinesis is the division of the cytoplasm and the rest of it's components. Before a cell can divide, it must be prepared. Interphase prepares a cell for mitosis. You should have learned all about the cell cycle including interphase in your previous activity. Now, let's take a look at MITOSIS. Division of the nucleus takes place in four phases or stages, prophase, metaphase, anaphase, and telophase. Cytokinesis is the final stage of mitosis. This activity takes you through a virtual lab, looking at online pictures of onion root tips.

#### Directions:

1. Go to the following site, **<http://biology.nebrwesleyan.edu/benham/mitosis/index.html>**
2. Use your notes from 5.2 to review the stages of mitosis
3. Now go to the following site,

**[http://www.biology.arizona.edu/cell\\_bio/activities/cell\\_cycle/activity\\_description.html](http://www.biology.arizona.edu/cell_bio/activities/cell_cycle/activity_description.html)**

4. Read the individual sections of the cell cycle and answer the questions below. They will not be answered in order!

1) During which stage of the cell cycle:

are chromosomes pulled to opposite ends of the cell? \_\_\_\_\_

does cytokinesis occur? \_\_\_\_\_

do the chromosomes align in the middle of the cell? \_\_\_\_\_

is the cell performing its duty? \_\_\_\_\_

does DNA duplicate? \_\_\_\_\_

do chromosomes begin to form? \_\_\_\_\_

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- 2) Why do the chromosomes line up along the metaphase plate (middle of the cell)?

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Click the “NEXT” button.

Read the directions before asking questions! You are about to be shown 36 pictures of various cells. Your job is to determine which step of the cell cycle the cell is demonstrated by various pictures. Keep track of each stage by filling in the table below. Use the drawings you made on the front side of this paper to help you.

Click the “NEXT” button to begin.

	Interphase	Prophase	Metaphase	Anaphase	Telophase	Totals
# of cells						36
% of cells						100%

- 3) Calculate the percentage of interphase pictures and record your answer in the table. Continue for each step of mitosis. **Round your answer to one decimal point.**

After examining all 36 pictures, answer the question below.

- 4) Why do you think the majority of the photos were interphase?

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"Don't mind Ashley. After looking through a microscope all day, anything large startles him."

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